

Decline of the generalist

The vigour of every discipline depends on people of broad vision.

Frederick Seitz

During the 70-odd years of my professional life, I have witnessed a continuously increasing degree of specialization in major areas of cultural activity. While the growing chasm between science and the humanities may once have provided the most obvious example — a matter that concerned C. P. Snow a generation ago — the fragmentation process has extended relentlessly into what were once well-integrated fields. Few scientists under 50 are familiar with, or express much interest in, areas of research outside their immediate professional concern. Specialization within the humanities has become so pronounced that aberrant concepts, such as Black Athena, which is based on the claim that the achievements of classical Greece originated in Africa, can flourish as essentially independent, free-floating intellectual structures.

This trend is partly a result of the growing complexity of most fields of research. Conditions of intense competition leave relatively little time for scholars to cultivate new, diverse interests. But a more important source lies in the changing policies of our educational institutions as they deal, necessarily, with larger numbers of students with narrow ranges of interest.

Most students are not being prepared to become broad, experienced leaders in a highly professional area. Instead they aim to find a useful place in a socio-economic structure that has less and less demand for relatively unskilled manual workers. Alongside this are the distractions of a highly intrusive popular culture, devouring a student's time that could, under other circumstances, be devoted to more intellectual pursuits. In the United States, education in mathematics has been degraded, as have other 'requirements' such as languages or 'core courses' that were standard when I was a student and important in my own development.

Is it desirable that we have a significant group of generalists in all cultural fields? I believe the answer is an emphatic 'yes'. One reason is to nurture progress in every area, because the major steps in the evolution of a field have generally been governed by an oligarchic assembly of experts with much broader than average vision. Even granting that most major advances are initially the work of a gifted individual, the collective opinion of the peer group, whose members have almost invariably made major contributions to the field as a whole, give the endeavour a sense of unity, as well as

guidance to the majority working in it. Individuals such as Albert Einstein, Niels Bohr, Arnold Sommerfeld, Erwin Schrödinger, Werner Heisenberg, Wolfgang Pauli, Paul Dirac, Eugene Wigner and Enrico Fermi, acting loosely as a group, steered the physics community into the age of quantum mechanics. Similar groups of leaders have played comparable roles in quite different areas outside science, such as the arts, history, archaeology, economics and social science.

Barring the guidance of such highly motivated and broadly based leadership, most fields of cultural development will either drift towards dull mediocrity or degenerate into uncoordinated islands governed by individuals of minor stature possessing narrow, idiosyncratic viewpoints. In this respect, the natural sciences have the great advantage that a firm intellectual foundation emerges from the interpretation of accurately reproducible experimental observations of the natural world.

I recognize that excessive conservatism

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may slow or forestall inevitable evolutionary advances. But when this occurs, the stresses within the professional community lead to a reshuffling of recognized authority. For example, the French impressionists struggled to gain deserved recognition.

What is the remedy for the ever-increasing degree of specialization? At the higher levels of education, the forces currently at work, both internal and external, favour specialization. Moreover, many social science and humanities groups at universities, particularly in the United States, are in the grip of movements gathered under the banner of political correctness, which rejects all or most of the patterns of authority that guided professions in the past. So reform and renewal must begin at the elementary and secondary levels of education.

Schools must recognize that 'elite' students can absorb a far more diverse programme of material than the average student. Here one deals with flexible, unconstrained minds capable of crossing disciplinary boundaries at will and possessing the originality and freedom to do so. Faculty and parental guidance at an early stage may help the process. Many generalists of the future would emerge naturally from this. The teachers involved must be professionally prepared in the domains they cover and dedicated to their mission. In general, they will merit special monetary compensation. ■

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Tunnel vision: changes in society have driven higher education to ever greater specialization.